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REPLY BRIEF FOR PETITIONER POWER REACTOR DEVELOPMENT COMPANY

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Supreme Court of the United States

OCTOBER TERM, 1960

No. 315

POWER REACTOR DEVELOPMENT COMPANY, *Petitioner,*

v.

INTERNATIONAL UNION OF ELECTRICAL, RADIO AND MACHINE WORKERS, AFL-CIO, *et al., Respondents*

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

REPLY BRIEF FOR PETITIONER POWER REACTOR DEVELOPMENT COMPANY

Before turning to the principal contentions urged in respondents' brief, it may be helpful to clarify the questions now actually before the Court by a preliminary reference to some matters that are *not* in issue here.

First, there is not now any issue between the parties with respect to the second question presented in the briefs of petitioners here and in No. 454 of whether the statute requires the Commission to make a finding of "compelling reasons" to justify the location of this or any other large power reactor at a site in a comparably populated area. Respondents apparently do not challenge the position taken by petitioners on this question but urge merely that the court below did not intend to hold to the contrary (br. pp. 27-28, 82-88). While we think the majority opinion of the court below speaks for itself on this, it would certainly not be profitable to discuss further just what that court did mean to hold.

Second, it should be emphasized again that there is not presented here the ultimate question of whether this reactor can be safely operated. That question, as the provisional construction permit itself (R. 718) and the Commission's opinion and findings (R. 711-12) made abundantly clear, is to be the subject of a future public report by the Advisory Committee on Reactor Safeguards in accordance with Section 182 b of the Act, followed by a further public hearing on evidence to be adduced before a hearing examiner, and his decision on the record then made will be subject to review by the Commission and the courts under Section 189.

On this point, all agree and have agreed from the inception of this project that, before this or any other reactor is permitted to be operated, such operation must be shown to be sufficiently safe to meet the strict statutory standard of adequate protection to the health and safety of the public. All agree, also, that, in determining the extent of such protection required, there must be considered both the magnitude of the potential damage involved, taking into full consideration the reactor's location, and the degree of improbability that any such damage can occur in the light of the technical design features of the reactor as completed and the other protective measures provided. That public safety is the overriding consideration was recognized by PRDC in testimony submitted in January, 1957, on the opening day of the hearing in this proceeding (R. 728-30). It was recognized by the Commission in its decision when it said that "There can be no doubt that public safety is the first, last, and a permanent consideration in any decision on the issuance of a construction permit or a license to operate a nuclear facility" (R. 646-47). It has similarly been recognized by the Solicitor General throughout his brief in this Court. The suggestion in respondents' brief (p. 29) that petitioners are attempting to temper this concern for health and safety by "considerations of expediency" is wholly unjustified.

By a number of inaccurate and misleading statements, respondents have sought further to create the impression that the general reactor safety record to date has been poor,

that precautions taken to protect the public are essentially inadequate, and that the particular reactor involved here is especially dangerous and still presents substantial unresolved safety questions. None of this is the fact. While it would be neither practicable nor profitable to attempt to refute all of the erroneous statements and innuendoes with which respondents' brief bristles, we have believed it worth while to lay to rest these serious charges. See Point III, pp. 30-33, below.

We turn now to a consideration of the positions taken by respondents in their brief on the various aspects of the questions which we believe are presented here. While not all of these positions are either clear or consistent, it is believed that the following is a fair distillation of the more important contentions advanced, in the order in which we shall deal with them in this reply brief:

With respect to the first question presented, the basic position urged by respondents is that the court below was right in holding that the Commission does not have the statutory authority or discretion to issue construction permits on a provisional basis without positive findings that the reactor can be operated safely upon its completion. The core of respondents' argument is that the Commission is required to make essentially the same safety finding before it authorizes construction of a reactor that is needed to permit its later proposed operation. Surprisingly, however, they also take the position that "neither the Act, nor the Commission's regulations, *require* a construction permit for the building of a reactor, up to the point special nuclear materials are used" (br. pp. 47-48). If this is really so, of course, this entire proceeding has been an unnecessary and expensive farce. How respondents can seriously argue that the provisional construction permit must be set aside because the overriding Congressional concern for public safety requires a definitive safety determination before construction is permitted to begin on the one hand, and yet urge that the statute, properly construed, does not require a construction permit at all until the

reactor has been completed to the point where it is ready to receive nuclear material on the other, is difficult to understand.[1]

Passing this paradox, however, respondents proceed to urge that the Act and its legislative history support their primary contention that the statute forbids issuance of provisional construction permits without positive findings with respect to safety of operation (Points I A, B, pp. 30-44). Respondents also urge that the Commission's own regulations require the same conclusion, that in all cases except this one they have been so construed and applied, and that here its findings were uniquely deficient and satisfied neither the statute nor the regulations (Points I C, E, pp. 45-58, 65-79). Finally, respondents urge that Congress has rejected rather than acquiesced in what we believe to be the Commission's consistent interpretation of the statute and its practice with respect to provisional construction permits (Point I D, pp. 58-64).

With respect to the second question presented, respondents apparently do not disagree with the position of petitioners that the statute does not require the Commission to find "compelling reasons" to justify the location of any large power reactor at a site having a population distribution around it comparable to that found here, but they urge, nevertheless, that the Commission's findings with respect to site were deficient and that it failed to give any

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[1] The construction permit here as in other cases provides that "the term 'completion date' as used herein means the date on which construction of the reactor is completed except for the introduction of the fuel material" (R. 716).

Section 101 of the Act requires a license to "manufacture" or "produce" a reactor ("utilization or production facility"). Although this provision has always been generally recognized to be applicable to construction of a reactor, there was until the promulgation of Section 50.10(b) of the regulations in early 1960 a considerable question as to just how far one could go before having to obtain a construction permit (10 C.F.R., 1961 Supp., Appendix p. 35, below). The stage at which a construction permit is required is now precisely defined in that regulation.

consideration to the question of the population distribution (Point II, pp. 82-90).

In this reply brief, we shall deal with each of these aspects of respondents' argument.

I

THE COMMISSION'S SAFETY FINDINGS MET THE REQUIREMENTS OF THE STATUTE AND THE REGULATIONS

The basic question presented here is one of statutory interpretation. Respondents emphasize that the Atomic Energy Act of 1954 requires the Commission to give overriding effect to the protection of the health and safety of the public. They urge that the statute, and particularly the language contained in Sections 182 a and 185, requires the Commission to make a positive finding before issuing a construction permit that the reactor can be operated safely at its proposed location (br. pp. 30-39).

A. CONGRESS INTENDED TO GIVE THE COMMISSION BROAD DISCRETION IN REGULATING THE INDUSTRY SO AS TO PROTECT PUBLIC HEALTH AND SAFETY WHILE PERMITTING AND ENCOURAGING MAXIMUM NUCLEAR PROGRESS

1. There is no disagreement here that Congress imposed on the Commission the obligation to regulate this entirely new atomic energy industry so as "to provide for the common defense and security and to protect the health and safety of the public" (*e.g.*, Section 2 d, Govt. Main Brief Appendix A, p. 92). In erecting the licensing framework within which the Commission was to work in implementing this and the other basic statutory policies, Congress could have chosen either to establish a series of specific safety findings required to be made at each stage of the licensing proceeding, or to delegate to the Commission a broad authority to prescribe by regulation such findings as it deemed appropriate to carry out its statutory obligations, including the obligation to provide adequate protection to the public health and safety.

Recognizing the novelty and technical complexity of this new field, Congress wisely chose the latter approach. It gave the Commission in Section 161 i the broad authority to

> "prescribe such regulations or orders as it may deem necessary . . .(3) to govern any activity authorized pursuant to this Act, including standards and restrictions governing the design, location and operation of facilities used in the conduct of such activity, in order to protect health and to minimize danger to life or property" (Govt. Main Brief Appendix A, p. 116).

The substantive licensing provisions covering research and developmental reactors are contained in Section 104. Subparagraph b of Section 104, specifically applicable to demonstration reactors of the type involved here, recognizes the Commission's basic safety responsibility by providing that in issuing licenses thereunder the Commission "shall impose the minimum amount of such regulations and terms of license as will permit the Commission to fulfill its obligations under this Act to promote the common defense and security and to protect the health and safety of the public. . . ." Subparagraph d of Section 104 further provides that no "license" (which includes construction permit in this context) may be issued under that section "if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security or to the health and safety of the public" (Govt. Main Brief Appendix A, pp. 111-12).[2] The Commission here as in other construction permit decisions made the finding called for by this provision. See Finding 35, R. 711.

These provisions implement and are fully consistent with the Congressional purpose to give the Commission the broadest authority in determining just what further

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[2] To the same effect, see also Section 50.40(c) of the Commission's regulations (10 C.F.R.), Appendix pp. 35-36, below. See also pp. 16-17, below.

determinations at different stages of the licensing procedure are necessary and appropriate to provide adequate protection to the public safety, and at the same time to further the Congressional policy to promote the rapid development of those reactor concepts which will, as Section 104 b also states, "lead to major advances in the application of atomic energy for industrial or commercial purposes".

As pointed out in our main brief (pp. 26-30), nothing in the language of Section 185, providing for the issuance of construction permits generally, or of Section 182 a, dealing with the type of information to be included in applications for licenses, including in terms "licenses to operate" reactors, is inconsistent with this broad delegation of authority to the Commission to devise practicable licensing procedures. The procedures established by the Commission pursuant to this authority provide fully for the protection of the public health and safety, and do so in a way which encourages the maximum progress in the application of atomic energy to peaceful uses. Plainly Congress intended the Commission to accomplish both of these objectives.

2. In our main brief (pp. 26-27, 37-47) we have analyzed the principal aspects of the Act's legislative history, including the colloquy between Senators Hickenlooper and Humphrey relied upon by the court below and respondents here. Respondents have simply ignored our analysis of the background to this colloquy (main brief, pp. 40-46), without which its significance cannot be understood. Indeed, in quoting the colloquy respondents have actually omitted that portion in which Senator Humphrey refers to the notice provisions of Section 182 and which illustrates that his concern was with these and related procedural aspects of that section. (Compare partial quotation in respondents' brief, pp. 41-42 with full quotation in our main brief, p. 39, n. 25.)

Respondents further urge, however, that an exchange between an industry spokesman, Mr. Paul McQuillen, and Chairman Cole at the hearings on the bill in 1954 independently indicates the latter's agreement to the proposition

that the Act as passed requires positive safety findings at the construction permit stage. In quoting this exchange, however, respondents omit a statement immediately preceding Mr. Cole's quoted interjection (br. pp. 39-40, n. 23) which indicates that he may have been referring primarily to another question raised by the witness—whether various activities requiring different licenses can be consolidated in a single license. See *Hearings Before the Joint Committee on Atomic Energy on S. 3323 and H. R. 8862*, 83d Cong., 2d Sess. (1954), p. 119, II *Legis. Hist.* 1753; *cf.* Section 161 h, first included in the bill after the conclusion of the hearings in question (I *Legis. Hist.* 645, 718). In any event, there is nothing whatever in the testimony of Mr. McQuillen or the comments of the Committee members that indicates that the former desired or the latter intended the bill to deprive the Commission of authority in appropriate cases to issue construction permits "on a provisional basis". On the contrary, Mr. McQuillen and certain other industry witnesses, with the problems presented by the financing of large commercial reactor projects primarily in mind,[3] merely wanted assurance that in such cases conversion of construction permits to operating licenses could be relatively automatic, and that in any event the construction permit holder would know in advance what he would have to do to obtain an operating license. In fact, in his statements (not quoted by respondents) following those of Chairman Cole he suggested that Section 185 would need amendment fully to accomplish his objectives, thus recognizing that the section as drafted (and later enacted) would not provide the kind of assurances he wished to have available for appropriate cases.

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[3] *See Hearings, supra*, pp. 114, 118, 119-20, 226-27, 417, II *Legis. Hist.* 1748, 1752, 1753-54, 1860-61, 2051.

B. THE COMMISSION'S LICENSING PROCEDURES ARE GEARED TO THE PRACTICAL PROBLEMS PRESENTED BY CONSTRUCTION, START-UP, AND OPERATION OF VARIOUS CLASSES OF REACTORS

Respondents urge vigorously that the Commission's own regulations, properly interpreted, require in all cases a positive finding that the proposed reactor can be safely operated at its location—presumably at its proposed full power—before any kind of construction permit can be granted. Such an interpretation would destroy the whole step-by-step licensing procedure which these regulations are designed to establish and which, contrary to respondent's further contention, the Commission has used in licensing developmental power reactors (pp. 17-19, below). A review of the licensing system so established and its relationship to the present state of development of reactor technology provides the most effective refutation to this argument.

The Commission's regulations provide two procedures for the licensing of nuclear reactors—one applicable to standardized, fully proven types, and one to more advanced or developmental types. Each of these approaches is designed, as it must be, to deal with the technical and practical problems which the particular type of project presents. Each approach provides in full measure for adequate protection to the health and safety of the public.

As the Commission pointed out in its opinion (R. 649), it is already true today that a number of the many small research reactors licensed for construction and operation by educational institutions and others are "of standard types, which have become virtually production line items." Since all relevant technical information on such standardized reactor designs is normally available prior to start of construction, applicants have initially submitted all the information needed for a full safety evaluation and have accordingly been issued construction permits on the basis of definitive safety findings. These construction permits are accordingly not "provisional" and are subject to none of the safety conditions prescribed for and included in per-

mits issued under Section 50.35 of the Commission's regulations. As the Commission also stated in its opinion, with construction permits of this nature there is "no great formal distinction between the first step construction permit and a second step licensing procedure" (R. 649). Of the 58 such research reactor construction permits listed in Appendix C to respondents' brief (pp. 102-04), 26 were in this category.[4]

While this licensing approach may thus be appropriate for those small research reactors which are now essentially production line models, as well as for large power reactors when they have achieved a degree of standardization sufficient to enable the Commission to make the finding required under Section 102 that they have "practical value" and so are subject to commercial licensing under Section 103, it is wholly impractical for an advanced developmental reactor of the type to which "priority" is to be given by the terms of Section 104. Such a reactor is by its nature and purpose a step beyond previously constructed and operated designs. The Commission has accordingly provided an alternate licensing procedure for reactors in this category which provides a step-by-step series of safety approvals. Contrary to respondents' repeated statements, every one of the nine power reactors listed in Appendix C to their brief—and many of the small research reactors as well—have been licensed by this procedure.

Section 50.35 of the regulations provides the keystone to this step-by-step licensing approach. While not limited in terms to developmental reactors to be licensed under Section 104, it is obviously intended to be utilized primarily for these types, because it is applicable only to those cases "where, because of the nature of a proposed project, an

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[4] CPRR Nos. 9, 10, 12-14, 17, 19, 20, 22-30, 33-36, 39, 41, 46, 50, 54. Copies of these permits are available in the Commission's public document room. Most of the remaining 32 construction permits listed by respondents, as well as those for all of the nine power reactors listed (pp. 17-19, below), were "provisional" and issued on the basis of the less definitive findings called for in Section 50.35 of the regulations.

applicant is not in a position to supply initially all of the technical information otherwise required to complete the application." In such cases, the Commission may issue a construction permit "on a provisional basis without the omitted information", but such permit is subject to the specific condition that there be a later "evaluation by the Commission that the final design provides reasonable assurance that the health and safety of the public will not be endangered." In order to issue such a provisional permit, this regulation requires that the Commission be satisfied that the information available is "sufficient to provide reasonable assurance that a facility of the general type proposed can be constructed and operated at the proposed location without undue risk to the health and safety of the public and that the omitted information will be supplied."

We shall refer briefly below to respondents' arguments that the findings contemplated by this provision are essentially the same findings that would be required were the construction permit not issued on a "provisional" basis, and also the contention that the findings actually made here did not meet the requirements of this regulation. Before turning to these subsidiary issues, however, it will be worthwhile to explore some important related aspects of the basic regulatory scheme, and the way the Commission has applied it. The purpose of this review is to summarize how not only the construction but also the start-up and operation of a large new reactor must normally proceed on a step-by-step basis, and how the Commission has accordingly geared its regulatory procedure to these practical facts.

Following issuance of the provisional construction permit, and during the necessarily extended period of construction of a large developmental power reactor, there is continuing review of the project by the Commission staff, including review of the progress of the applicant's program of research and developmental work intended to adduce the further technical data required for final evaluation. The nature, extent, and thoroughness of this continuing review of large developmental reactors in general is indicated in

a recent study of licensing procedures prepared by the Commission for the Joint Committee on Atomic Energy, in which the regulatory steps for each licensed power and test reactor thus far proposed are listed and described.[5] In this case this procedure has also included the submission to the Commission and service on all parties on a quarterly basis of detailed technical progress reports, as prescribed by the Commission in its findings (R. 711-12), in its order (R. 713-14) and in the construction permit itself (R. 717-18).

Upon completion of construction of a reactor authorized under Section 50.35 and upon conclusion of the required further proceedings (including a report by the Advisory Committee on Reactor Safeguards and a public hearing[6]), the Commission is not then faced with the black-or-white decision of whether or not, like an ordinary power plant or paper mill, it is to be permitted to be switched on and operated at its designed power. Again, with a standardized production-line type of reactor the Commission may on completion of construction grant a full-power operating

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[5] This study is entitled "The Regulatory Program of the Atomic Energy Commission. A summary of information and materials relating to the AEC's regulatory organization and activities, including chronologies of power and test reactor cases," and is included in Volume II of a recent Joint Committee on Atomic Energy Staff Study on *Improving the AEC Regulatory Process* (March 1961), pp. 87, 151-306.

[6] These are required for all Section 103 and 104 b reactors and for Section 104 c testing reactors by the provisions of Section 182 b and 189 a of the Act, as amended in 1957, and by the provisions of the decision in this case (Finding 37, R. 712; R. 718-19).

Respondents imply that this case should have been referred again to the Advisory Committee on Reactor Safeguards (ACRS) prior to this time. There is no occasion for a further ACRS report, however, until the next stage in the licensing procedure—start-up of the reactor—is reached. In fact the ACRS or one of its subcommittees has met regularly over the last two years with respect to various aspects of this reactor, as part of the continuing safety review during construction discussed above. See *Improving the AEC Regulatory Process, supra* (Joint Committee on Atomic Energy, March 1961, Vol. II, pp. 177-79).

license in a single and rather routine step, and again this procedure has become customary with many of the small research reactors discussed above. With a large power reactor of advanced design, however, the final verification of its safety to operate at its designed power is obtained only by detailed nuclear testing at low and intermediate power levels. As a result largely of experience obtained in the course of licensing the start-up and operation of the first such reactors, the Commission in early 1960 accordingly promulgated Section 50.57 of its regulations to spell out in detail a further series of licensing steps for those cases where such procedure is necessary or appropriate. This regulation is the logical sequel to the provisional construction permit procedure provided by Section 50.35.

Under Section 50.57 of the regulations (Appendix, pp. 36-37, below), an applicant may receive initially one or a series of "provisional" operating licenses, each of which will permit operation of the reactor only for a limited time, at a limited power, and in accordance with such other stated conditions as are appropriate. The safety showing required by this provision of the regulations is not that the reactor can be shown to be safe for operation at its full designed power, but only that those "activities" authorized by the provisional operating license can be conducted without endangering the health and safety of the public." When the results of this limited operation are in hand, they serve to verify whether operation at a somewhat higher power is safe, and it is only when the results of this operation in turn are in hand that operation at a still higher power can be authorized. The number of steps may vary from one or two to as many as four or five. At each step the safety of the proposed operation is reviewed and a definitive determination is made on the basis of all of the available data, including the most recent operating experience. This carefully devised procedure, far from endangering the public health and safety, provides exceptional protection in the form of not one but repeated safety reviews before the final permission to operate the reactor for the full term requested and at its full proposed power is granted.

The uncontroverted expert testimony with respect to the importance of following a step-by-step approach with de-

velopmental reactors and the Commission's findings thereon is summarized in our main brief (pp. 30-32). In 1960, Commissioner Graham reported to the Joint Committee that these views were still held by the "reactor safeguards people", who emphasized that in this area "you are moving on a step-by-step basis", and "you may be designing as you are still building." He added that they did not quarrel with this kind of approach because "you are trying to improve the art, you are trying to make some new steps, and, in the words of the joint committee you are not trying to have just carbon copies." *Hearings Before the Joint Committee on Atomic Energy on Development, Growth and State of the Atomic Industry*, 86 Cong., 2d Sess. (1960), p. 104.

As respondents read the applicable statutory provisions, none of this procedure is valid. The requirement they urge —that in *all* cases a positive safety determination of the proposed operation of the reactor must be made before construction starts—would frustrate the Congressional purpose to foster and expedite developmental reactor projects without contributing to the protection of public safety.

C. THE COMMISSION HAS CORRECTLY AND UNIFORMLY INTERPRETED AND APPLIED ITS REGULATIONS HERE AND IN OTHER POWER REACTOR LICENSING CASES

By a combination of misinterpreting both the Commission's regulations and the particular findings which it made in this case, respondents are able to assert that the Commission's decision here is uniquely erroneous and that in no other case did the Commission exceed its statutory authority (as they and the court below have construed it). In their summary of argument they thus state that (br. p. 24):

> "The applicable regulations of the Commission can be interpreted to fall within the Commission's delegation of authority. As heretofore applied by the Commission in other cases, they are valid. However, as interpreted and applied by the Commission in the case at bar, they are not valid."

In thus differentiating between the Commission's action in other cases and that taken here, respondents are demonstrably wrong.

1. SECTIONS 50.35 AND 50.40 OF THE COMMISSION'S REGULATIONS ARE CONSISTENT WITH EACH OTHER AND WITH THE COMMISSION'S PRACTICE

In support of their interpretation of the regulations, respondents rely primarily on the "common standards" for commercial and developmental licenses and construction permits set out in Section 50.40 (10 C.F.R., Appendix, pp. 35-36, below). They urge that especially subsection (a) of this regulation requires the Commission in terms to find, before it issues *any* license or construction permit, not only that the activities which would be authorized or approved thereby are such as to provide reasonable assurance that the health and safety of the public will not be endangered but also that other activities that would be authorized only by a later operating license (including presumably operation of the reactor at its full designed power) would similarly meet this standard. In other words, they argue that this provision of the Commission's regulations itself imposes at the construction permit stage essentially the same standard of proof of safety of operation which would be required to sustain issuance of the eventual operating license, and that the language of 50.35 of the regulations should similarly be so interpreted.

Apart from the fact that respondents have undertaken a necessarily heavy burden in urging that a regulatory agency has misinterpreted its own regulations (*e.g., Bowles v. Seminole Rock Co.*, 325 U.S. 410, 414), comparison of the language of these two provisions as well as a consideration of the obvious purpose of providing a specific procedure for those construction permits to be issued "on a provisional basis" refutes their argument. If the Commission had intended to require a definitive determination of safety of operation of the particular reactor prior to issuance of a construction permit under all circumstances, it would not have been necessary to include Section 50.35 in its regulations at all, and particularly to articulate therein the specific condition that it was subject to a later determination by the Commission that "the final design" is safe. The obvious purpose of Section 50.35 was to permit construction to begin on a reactor before its "final design" had been definitively

chosen and *a fortiori* before all the information was at hand to provide the requisite degree of proof that such "final design" could be safely operated.

Furthermore, in addition to the controlling necessity for interpreting the general provisions of Section 50.40 in such a way as to be not inconsistent with the more specific terms of other regulations, these provisions on their face do not have the meaning attributed to them by respondents. The concept of a broad category of standards to be commonly applicable to issuance of several classes and types of licenses plainly embodies the application of the stated considerations (to the extent they are in fact applicable) to the activities or other matters with which *the particular license involved* is concerned. As used here, "license" plainly includes "construction permit."[7] Only those activities which would be authorized or approved by the licensing action in question, therefore, are intended to be required by the terms of this particular regulation to be measured by the stated considerations. The Commission has accordingly read all three of the subsections of Section 50.40 as applying only to those things proposed to be approved or authorized by the particular license being considered for issuance—in this case, a provisional construction permit issued under Section 50.35 and which approves and authorizes only construction of the reactor at its proposed location, subject to later determination by the Commission that its "final design" provides reasonable assurance of safe operation there (R. 644).[8] The controlling provisions of Section 50.35, of

[7] Section 185 of the Atomic Energy Act of 1954, providing for construction permits, states that "For all other purposes of this Act, a construction permit is deemed to be a 'license'". Section 50.30 of the regulations (10 CFR), providing for the filing of license applications, adopts this usage by stating that "Each application for a license, *including whenever appropriate a construction permit*, or amendment thereof should be filed with the Atomic Energy Commission . . ." (italics supplied).

[8] This interpretation by the Commission of the specific requirements of Section 50.40, although criticized by respondents as a "patent distortion" and "tongue-in-cheek interpretation" (br.,

course, do require further findings with respect to probable safety of operation, and these were made here (pp. 19-20, below).

2. THE CONSTRUCTION PERMITS ISSUED BY THE COMMISSION FOR OTHER DEVELOPMENTAL POWER REACTORS HAVE BEEN PROVISIONAL AND HAVE BEEN ISSUED FOR REACTORS HAVING SUBSTANTIAL UNRESOLVED TECHNICAL PROBLEMS EXPECTED TO BE SOLVED DURING THE COURSE OF CONSTRUCTION

Analysis of the Commission's construction permit decisions on all of the eight other power reactors authorized prior to the decision of the court below and listed in Appendix C to respondents' brief (p. 102) not only confirms this interpretation of the regulations but utterly refutes respondents' contention that the Commission's practice in these other cases has been in accord with respondents' interpretation of the statute and regulations. Excerpts from the

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pp. 46-47) is plainly correct. The findings required by Section 50.40(b) with respect to technical qualification to engage in the "proposed activities," and by Section 50.40(c) that "issuance of a license" will not be "inimical to the common defense and security or to the health and safety of the public" have usually been made in construction permit decisions in terms only of design and construction of the reactor and of issuance of the construction permit, respectively, without reference to operation or issuance of an operating license. See, *e.g.*, Saxton Nuclear Experimental Corp. and Carolinas Virginia Nuclear Power Associates, Inc., Govt. Reply Brief Appendix B, pp. 63-64, and most of the research reactor construction permits listed in Appendix C to respondents' brief beginning with CPRR-6 of August 29, 1956, available in the Commission's public document room. See also Findings 29-35, R. 710-11. Since in most cases the applicant has also requested an allocation of special nuclear material to be included in his construction permit in accordance with Section 50.60(c) of the regulations, there has usually been a finding of financial qualification both to construct the reactor as required by Section 50.40(b) and to operate it for a reasonable period of time in accordance with Section 50.60(c). See, e.g., Consolidated Edison Co., CPPR-1, Govt. Reply Brief Appendix B, p. 62, and Finding 34, R. 711. See also AEC Opinion, R. 680-81, 685.

construction permits and supporting findings for each of these reactors are contained in Appendices A and B to the Solicitor General's Reply Brief in No. 454. Inspection of this material will show that in each case the construction permits were issued on a provisional basis under Section 50.35 of the regulations, prior to the availability of all the required technical information, and on the basis of findings of reasonable assurance of safety of operation only of "the general type proposed", in the words of that regulation. Each of them also contains the specific condition required by Section 50.35, that the permit is "provisional" and subject to the production of the omitted data and to a later finding by the Commission that the final design provides adequate protection to the public health and safety.

That the findings made in these cases of reasonable assurance of safety of the general type or design concept proposed were not intended to be of the definitive nature which respondents claim to be required by the statute is further confirmed by the fact that in many instances the unresolved technical problems presented by the particular reactor were specifically spelled out in the construction permit or decision. See material quoted in Govt. Reply Brief Appendix A, pp. 51-61, with respect to CPPR Nos. 5, 6, 7, 8, 9. Thus in the first construction permit order entered by the Commission after enactment of the 1957 amendments to the Act requiring publication of the report of the Advisory Committee on Reactor Safeguards and a public hearing, the full Commission issued an accompanying opinion which made the nature of its construction permit findings perfectly clear. *In Matter of Yankee Atomic Electric Co.*, Docket No. 50-29 October 31, 1957 (Govt. Reply Brief Appendix A, pp. 52-53), the Commission stated:

> "The construction permit must be provisional at this stage of the proceeding principally because Yankee has not completed the design of the reactor and certain features of the proposed facility present unresolved questions which might affect its safe operation. These features have been identified and discussed in the testi-

mony furnished at the hearing by Dr. Clifford K. Beck, Chief of the Hazards Evaluation Branch, and in the report of the Advisory Committee on Reactor Safeguards. We agree with Dr. Beck and the Advisory Committee that the experimental program outlined in the application will probably produce the information needed to resolve these questions prior to consideration of final design and operating procedures and conversion of the construction permit to a license."

There is no validity to respondents' repeated statement that the Commission's interpretation of the statute and regulations and its application thereof in other cases have been in accord with their contentions here.

3. THE FINDINGS HERE ARE EQUIVALENT TO THOSE MADE IN OTHER CASES —

Respondents further seek to distinguish the findings made here in accordance with Section 50.35 of the regulations from those made in all other cases on the ground that when the Commission included in certain of the findings here the words "for purposes of a provisional construction permit", it intended a major change in the purport of the finding. In numerous places in their brief, respondents urge that the use of this phrase means that the Commission intended to find no more than that the construction work itself could be carried on safely. See pp. 26, 57, 61, 72, 78.[9] Even a cursory examination of the findings as a whole and of the Commission's opinion makes it clear that this is not so. The Commission here, as in its other developmental power reactor cases, found a reasonable assurance that a reactor "of the general type proposed" could be operated at the proposed location without undue risk to the health and safety of the public, and that the omitted technical data

[9] Respondents apparently base this argument with respect to what the Commission's findings under Section 50.35 of the regulations mean by reference to the Commission's explanation (R. 643-44) of what the very different language in its "common standards" regulation, Section 50.40, means. See respondents' brief pp. 46-47 and discussion of Section 50.40, pp. 16-17, above.

would be supplied. See Findings 18c, 21, 22, 30, 31, 32, 33, R. 706, 707-08, 710-11. As its opinion made clear, these findings here (and in the other provisional construction permit cases) were made on the basis of a lesser degree of "reasonable assurance" than would be required for approval of actual operation, and because of the nature of the issue, were necessarily made in terms of an informed probability that the necessary definitive safety verification could be made. It is plain, however, that the whole regulatory concept of provisional construction permits for developmental reactors is and must be based on this approach.[10]

The use of the phrase "for purposes of the provisional construction permit" in some but not all of the Commission's safety findings here has no more significance than to emphasize, in this first contested licensing case, that the Commission was *not* making the definitive safety determination which would be required later and which respondents had urged should be required to be made then.

D. DEVELOPMENTS FOLLOWING ENACTMENT OF THE 1954 ACT RELIED UPON BY RESPONDENTS PROVIDE FURTHER INDICATION OF ACQUIESCENCE BY CONGRESS IN THE COMMISSION'S PROVISIONAL CONSTRUCTION PERMIT PROCEDURES

Respondents urge that the Commission "did not keep the Joint Committee fully informed about the application of the construction permit procedure" and that there was no acquiescence in this procedure by Congress (br. p. 60). The very quotation there given from a Commission letter to the Joint Committee of October 9, 1956, published in that Committee's 1957 Staff Report on "A Study of AEC Procedures and Organization in the Licensing of Reactor

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[10] See Commission's 1956 explanation to the Joint Committee of its provisional construction permit procedure, quoted below, p. 21; see also Finding 31 (R. 710) that "There is reasonable assurance that theoretical and experimental programs under way will develop sufficient data to justify the issuance of an operating license, and that the results of these programs will be available prior to the time it is necessary for the Commission to rule on the operating aspect of the PRDC license Application."

Facilities" (p. 197) proves the contrary. In this letter the Commission explains that its finding in "conditional construction permit" cases is not the positive one urged by respondents that the proposed reactor can be safely operated, but rather a finding of "reasonable assurance that the unresolved safety problems can be resolved" so as to make such operation safe. This is a fair summary of the approach taken in Section 50.35 of the regulations and consistently applied by the Commission here and in other provisional construction permit cases.

Any doubt that this is what was meant is eliminated by the next paragraph of the same 1956 Commission letter to the Joint Committee, which respondents did *not* quote. This includes the further explanation that

> "the issuance of a conditional construction permit merely means that, based on existing information, it is the opinion of the Commission that it will be possible for the designers of the reactor to resolve any existing design and operational uncertainties in such a way that when the final design and operating procedures of the reactor, including its containment, are evaluated, they will be found to offer no unacceptable hazards" (*Study of AEC Procedures*, *supra*, p. 308).

That the Joint Committee so understood and accepted the Commission's regulatory scheme is further indicated by the reasons expressed for not approving what respondents call "the only aspect of the PRDC proceeding that came before it for consideration" (br. p. 62). On June 27, 1957, while the construction permit hearings in this case were still being held before a Commission hearing examiner, representatives of respondents testified at hearings held before a subcommittee of the Joint Committee with respect to appropriation authorization legislation, and strenuously opposed the authorization of appropriations to the Commission for research and development work in support of the PRDC project. This work was to be done under a contract between the Commission and PRDC which called for such assistance and which had been exe-

cuted under the Commission's Power Demonstration Reactor Program. See *Hearings Before the Subcommittee on Legislation of the Joint Committee on Atomic Energy on Authorizing Legislation for AEC's Fiscal Year 1958 Construction Budget*, 85th Cong., 1st Sess. (1957), pp. 597-633. PRDC's statement submitted to the Joint Committee in reply to this testimony contained among other things an explanation of the factual issues in the then pending proceeding and an analysis of the Commission's provisional construction permit practice (*id.* at pp. 633-39).

In its report on authorizing legislation, the Joint Committee recommended denial of funds for the PRDC contract on the ground that the project was the subject of pending litigation:

> "The committee does not approve the requested authorization for preconstruction research and development work and waiver of fuel-use charges in connection with the reactor project of the Power Reactor Development Co., since legal proceedings before the AEC *to determine the probable safety of the proposed reactor* are still pending" (italics supplied).[11]

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[11] (Sen. Rep. No. 791, H. R. Rep. No. 978, 85th Cong., 1st Sess. (1957), p. 19. In the legislation as enacted, no funds were authorized in terms for the PRDC contract, but the very amount which had been requested for this purpose was in fact authorized "for research and development in Commission laboratories to advance the technology of the fast breeder concept" (P.L. 85-162, Section 111(a)(2), 71 Stat. 409). The further legislative history of this provision made it clear that Congress intended to authorize the Commission in its discretion to use these funds for the specific research and development work contemplated by the contract with PRDC. See summary in *Hearings Before the Subcommittee on Legislation of the Joint Committee on Atomic Energy on AEC Authorizing Legislation*, 85th Cong., 2d Sess. (1958), pp. 374-84. As Chairman Durham of the Joint Committee stated on the floor, "It is understood by most of the members that the $1,500,000 can be expended for research and development of benefit to that [PRDC] project, and it should be expended." 103 Cong. Rec. 14116 (1957). This approach was followed in the subsequent appropriation action

The Joint Committee thus recognized that the issue then pending before the Commission in this case was not whether the Commission could make a positive finding at that time that the reactor could be safely operated as proposed, as respondents contend, but rather whether it could determine "the probable safety of the proposed reactor." It thus understood that the finding called for by Section 50.35 of the Commission's regulations was one of reasonable assurance in terms of informed probability that the requisite positive safety showing could later be made. As pointed out in our main brief (pp. 49-51), at that time Congress had under consideration certain proposed amendments to the licensing provisions of the Act which it later adopted without including therein any amendment to alter the Commission's provisional construction permit practice.

That practice was again described to the Joint Committee in the following year (1958), and subsequently. See AEC Opinion, R. 655-58 and citations in footnote 31, p. 50 of our main brief. Respondent's statement (br. pp. 53-54) that in connection with a proposed revision, later withdrawn, to Section 50.35 of the regulations the Commission advised the Joint Committee that the regulation requires a finding of definite assurance of safe operation at the time the construction permit is issued is refuted by respondents' own quotations from the relevant hearings, in which the Commission once again took the position that the existing provisional construction permit regulation required not a definitive safety finding with respect to the particular reactor but "reasonable assurance, in effect, that this

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taken. See Conference Report on H. R. 9379, H. R. Rep. No. 1242, 85th Cong., 1st Sess. (1957), p. 2, cited by respondents at p. 62 of their brief.

It was in connection with this controversy that the Chairman of the Commission wrote the Chairman of the Joint Committee urging approval of appropriations to enable the Commission to carry out its contractual obligations and pointing out that, in reliance on such obligations, PRDC had expended substantial sums. Daily Cong. Rec., Aug. 5, 1957, pp. A6320-21; respondents' brief, p. 67.

research program will be successful."[12] Such findings, not challenged in these judicial review proceedings as unsupported by the evidence, were made here. See Findings 18c, 21, 22, 30, 31, 32, 33; R. 706, 707-08, 710-11. See also Opinion, R. 665, 676-77.

It is quite true that various aspects of the Commission's handling of the early phases of the PRDC case evoked criticism from some members of the Joint Committee. A particular target for this criticism was the Commission's then practice of not releasing letters received from its Advisory Committee on Reactor Safeguards, and of issuing licenses without prior notice but subject to later hearings if requested. In these respects, the 1957 amendments to the Act effected changes in the licensing procedures thereafter followed. Since in fact the Commission's order now under review was issued on the basis of findings of fact made after extensive hearings, prior to which the Advisory Committee's earlier letter had been made public, the validity of the criticism which was made of the Commission's earlier procedures is not here in issue.

In this connection, it should be noted that the original report of the Advisory Committee on Reactor Safeguards on the PRDC project did not, as respondents infer, recommend against the issuance of a provisional construction permit. On the contrary it expressed the Committee's opinion as of June 1956 that there was not then sufficient information to provide the kind of assurance that "the proposed reactor" could be safely operated to permit approval of such operation and it recommended an expanded re-

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[12] See respondents' brief, p. 55; *Hearings Before the Joint Committee on Atomic Energy on Development, Growth, and State of Atomic Energy Industry*, 87th Cong., 1st Sess., p. 73, Official Transcript, February 21, 1961. As recently as March 1961, the provisional construction permit procedure was again described in a report by the Commission to the Joint Committee in terms of findings of reasonable assurance of safety of "the general type proposed", with "further and more definitive evaluations of safety" being made prior to issuance of an operating license. See *Improving the AEC Regulatory Process*, Joint Committee on Atomic Energy, March, 1961, Vol. II, p. 154.

search and development program (R. 587-93), which has since been carried out, to obtain the requisite safety verification. Six of the members of this Committee testified in the hearings in this case; some of their testimony was summarized in the Commission's opinion as so interpreting the Advisory Committee's original letter, and as concluding that the requisite data to prove that the reactor could be safely operated would probably be obtained (R. 672-76). This testimony formed an important basis for the Commission's findings of fact. As noted above, these findings have not been attacked in these judicial review proceedings as unsupported by the evidence.[13]

II

The site findings made met the requirements of the statute and the regulations

Since respondents do not now urge that the statute requires the Commission to find "compelling reasons" to justify the location of any large power reactor at a site located in an area having a population distribution comparable to that found here, we need not elaborate on the discussion of this question contained in our main brief. Respondents do urge, nevertheless, that the Commission's findings with respect to site were deficient, and they lift out of context a single statement in the Commission's opinion to support a contention that the Commission failed to give any consideration whatever to the question of the surrounding population. We think that this contention is groundless and that the Commission's findings here with respect to site plainly met the requirements of both the statute and the regulations.

Before the Commission can make the positive safety determination required to authorize operation of this or any

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[13] In accordance with amended Section 182 b of the Act, a further public report by the Advisory Committee on Reactor Safeguards will be made prior to the holding of hearings on a license to start up the reactor. There has been no occasion to request such a further report prior to this time. See p. 12, n. 6, above.

other reactor, it must take into consideration not only all of those features of the "final design" of such reactor that have a bearing on safety, including the effectiveness of the containment and other protective devices provided, but also the environmental characteristics of the site. The Commission plainly recognized this when it stated in its opinion that "the question of safety obviously cannot be considered without regard to proposed location" (R. 677).

When a provisional construction permit is under consideration, however, a more limited aspect of the problem is presented. By hypothesis, the final design of the reactor and of all its safety and protective features has not yet been positively settled. Yet the site is definitely chosen at the time the construction permit is issued. The Commission's consistent practice under Section 50.35 of its regulations, accordingly, has been to determine at that time the suitability of the site for a reactor of the general size and type proposed, coupled with a determination in terms of "reasonable assurance" that the precise design features and protective devices needed to make such reactor adequately safe for this location can be developed and verified during construction.

The extent of the theoretical hazard from any reactor is determined by the quantity of the toxic fission products which are built up in its fuel elements during the course of its operation; this amount is in turn a function of reactor size or power and of the length of time for which it has operated without reloading of nuclear fuel (R. 739-44, 874-78, 901). For this reason, it is both sensible and practicable in evaluating the suitability of a site to do so in terms of the size (power) and general type of the proposed reactor to be placed thereon.[14]

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[14] The importance of the power level of a proposed reactor in evaluating the suitability of its site from a population distribution standpoint has been recognized in criteria for site evaluation recently tentatively proposed by the Commission (26 Fed. Reg. 1224). See p. 29, below.

This is just what the Commission did here. Its site findings are, contrary to their characterization by the court below and by respondents, both plain and definite. Furthermore, while respondents object to our reference to all of these findings as "uncontested" (br. p. 83), it is certainly undisputed that no contention was advanced in the court below or is made here that they or other related findings were not adequately supported by the evidence.

First, the Commission found for purposes of the provisional construction permit that a reactor "of the general type proposed in the PRDC Application and amendments thereto can be constructed and operated at the location without undue risk to the health and safety of the public" (Finding 22, R. 708), and that a reactor of such type "can be so designed that no credible accident in the course of its operation is likely to result in the release of significant quantities of fission products into the atmosphere" (Finding 30, R. 710).

Even more specifically, and without reference to the provisional construction permit, the Commission made the definite finding of "reasonable assurance that the proposed site is generally suitable for a reactor of the type and size described in the Application, if the reactor is otherwise shown to be capable of operation without undue risk to the public health and safety, including demonstrations of stability and adequate containment" (Finding 32, R. 710). It coupled this with the further unqualified finding that there was "reasonable assurance that theoretical and experimental programs under way will develop sufficient data to justify the issuance of an operating license, and that the results of these programs will be available prior to the time it is necessary for the Commission to rule on the operating aspect of the PRDC license Application" (Finding 31, R. 710).

Finally, the Commission found that "the site will prove suitable for the proposed reactor" if it is demonstrated that it is inherently safe and that "no credible accident can release significant quantities of fission products into the atmosphere," and it added that "there is reasonable as-

surance" that these can be established (Finding 21, R. 707-08). In support of the foregoing the Commission included in its findings a description of the site which recited in detail the population distribution around it (Finding 19, R. 706-07; see also R. 677, n. 62).

Respondents attempt to dismiss these findings by drawing comparisons with the language used by the Commission in its Initial Decision (to the form of which they also objected), and by urging that a clause in the Commission's opinion to the effect that "safe operation of the reactor will be as likely in that location as in any other location" (R. 678) indicates that the Commission totally disregarded population in its evaluation of the site.

The statement referred to followed a determination that the information then available was sufficient to give reasonable assurance that the site was satisfactory from structural and underground water flow standpoints. It noted that studies of certain other categories of environmental data including weather, hydrology and geology were still in progress, and it then added the statement so heavily relied on by respondents that

> "Although the data of these types are not yet complete or conclusive, the record gives reasonable assurance that safe operation of the reactor will be as likely in that location as in any other location. We anticipate that knowledge to be acquired will fortify that assurance" (R. 678).

What the Commission was primarily talking about here was the meteorological, hydrological and similar data which at that time had not been completely compiled. These data, as the Commission indicated, were not of a nature to be "disqualifying" (R. 678), but were of a type which, if they turned out to be particularly unfavorable, could be engineered against. The undisputed testimony is that any problems presented by further data to be obtained in these categories could be solved by careful engineering and the

adoption of properly developed operating procedures,[15] and the Commission in its Finding 20 recognized this by noting that any "design modifications required by the results of those studies" would be considered at the time the question of an operating license is considered (R. 707).

Finally, respondents refer to certain population distribution criteria for reactor sites, recently proposed by the Commission, as somehow reflecting adversely on the Commission's findings here. In fact, as respondents have to admit (br. p. 89), the PRDC site satisfies the proposed criteria in all particulars by a wide margin; the exclusion distance of some 2900 feet for the proposed reactor, for example (R. 706-07), is more than double the minimum of 0.24 miles (1277 ft.) suggested for a reactor of the proposed power (300 megawatts). See 26 Fed. Reg. 1226, Feb. 11, 1961. Whether the final design, including proven protective mechanisms for the particular reactor as completed and tested, provides sufficient protection to public health and safety for operation at the power to be initially authorized under Section 50.57 of the regulations is the issue to be determined in the forthcoming operating license proceedings. As stated above, we believe the Commission's findings in this area (summarized above, pp. 27-28) clearly satisfy the requirements imposed for issuance of a provisional construction permit. This is the only issue presented at this stage of the proceedings.

[15] Arthur E. Gorman, PRDC consultant and sanitary engineer with reactor environmental experience as a former member of the Commission staff, stated: "Any difficulties which I can foresee from possibly unfavorable environmental information yet to be obtained —such as that on meteorology and water currents—are difficulties which I believe can be solved by careful engineering and the adoption of properly developed procedures of operation" (Tr. 4259; not printed). See also Tr. 3754 and testimony of Dr. Abel Wolman, R. 109-10. Mr. Gorman also testified that much of this type of environmental data is information which by its nature takes a long time to compile (Tr. 4258-59), and that he did not know of any site at which it was not necessary to collect much of it during the construction period (Tr. 3804-05, not printed).

III

Respondents have no basis for asserting that reactor safety experience has been alarming or that this reactor now presents major unresolved safety questions

In spite of respondents' efforts to give a contrary impression, the reactor safety record in this country and abroad has been remarkably good and compares favorably with that in any conventional heavy industry. In an appendix to their brief, pp. 105-08, they list some 22 "reported atomic reactor accidents" in the United States and an additional 19 in foreign countries, an unstated number of which they describe as "causing serious injuries to reactor personnel and undetermined injuries to the surrounding population" (p. 15). This is grossly misleading. The fact is that, as reference to a more complete and accurate summary of these occurrences contained in Appendix C to the Solicitor General's Reply Brief in No. 454 shows (pp. 66-91), the great majority of these "accidents" cannot properly be so classified at all, but were merely operating difficulties of varying magnitude, resulting in no injury or danger to operating personnel or the public, or even significant damage to the reactor itself. Moreover, several of them occurred in experimental reactors during experiments in which standard safety precautions were dispensed with in order to achieve the experimental conditions desired.[16]

Not a single one of the so-called "accidents" is known to have caused death or any injury whatever to a member of the public or to anyone outside of the reactor structure. Nothing in reactor experience to date is inconsistent with

[16] An example is the excursion experienced by the Commission's Experimental Breeder Reactor No. 1 (EBR-1) in 1955, which occurred when the reactor was purposely put on a fast rising power curve after intentionally disconnecting certain safety mechanisms and stopping the flow of coolant. Contrary to the implication in respondents' brief (p. 89, n. 45), no significant amount of radioactivity was released. No one was injured in any way. See testimony of Dr. Norman Hilberry, Director of the Argonne National Laboratory, R. 791-92.

the expert opinion mentioned in the Commission's Brookhaven Report and referred to in the report of the Joint Committee on Atomic Energy on the 1957 amendments to the Act, that the chance of a member of the public being killed by a reactor accident in any of an assumed 100 reactors operating in populated areas in the United States is of the order of one in 50 million. See R. 884-85, and Sen. Rep. No. 296, H.R. Rep. No. 435, 85th Cong., 1st Sess. (1957), pp. 2, 3.

The further implication in respondents' brief that the PRDC reactor is particularly dangerous and that even today serious safety problems remain unsolved is also without foundation in fact. Admittedly, this reactor represents a substantial step forward in reactor design, and the over-all project is one calculated in the words of Section 104 of the Act to "lead to major advances in the application of atomic energy for industrial or commercial purposes." As the Commission has summarized in its opinion and findings, however, the reactor is by no means the first of its kind; a great deal of successful operating experience has been obtained from a small sodium-cooled fast breeder reactor (EBR-I) first operated by the Commission in August 1951 (Finding 4, R. 701-02). In fact, this was the world's first nuclear reactor to generate electricity (R. 828-30). There is also very considerable experience in the use of liquid sodium and related materials as coolants, so that this important phase of the PRDC project is based on well established technology (Finding 9, R. 703). In addition, two other large fast breeder reactors referred to in the Commission's findings (R. 702) have been built; one of these, a reactor constructed by the United Kingdom Atomic Energy Authority at Dounreay, Scotland, has been undergoing low power operational testing since December, 1959, and the second, the Commission's own Experimental Breeder Reactor No. 2, is now expected to be loaded with fuel and to undergo nuclear testing during the late spring and early summer.[17]

[17] Respondent's statement that the Dounreay reactor has en-

With every reactor type there are certain events which must particularly be guarded against. As the Commission pointed out in its opinion, with a fast reactor of this type the fuel elements must be so designed that they cannot when heated "bow" or bend inward to produce a reactor instability; this and other precautions are needed to prevent the possibility that the fuel will so overheat as to melt down (R. 669-72). On the other hand, a reactor of this general design has inherent safety features not available to other types, such as very small excess reactivity in the control system and complete absence of any high pressures around the reactor itself. See AEC Opinion, R. 672; testimony of Dr. Hans Bethe, R. 742-43, 748-49. As one of the Commission's uncontested findings concludes, "There is no inherent hazard or danger to the health and safety of the public in the construction or operation of fast breeder reactors" (Finding 5, R. 703).

The statement by respondents that PRDC has not yet solved the problem of possible inward bowing of fuel elements (br. p. 9) is simply untrue. After tests in hot liquid sodium conducted over a considerable period of time had indicated that certain metallurgical characteristics of the uranium fuel pins required a different support structure than provided by the original design, the mechanical method of supporting the fuel pins was redesigned to provide a honeycomb grid support made of stainless steel approximately every three inches. This redesign was adopted in

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countered "unique fast reactor problems" (br. p. 74) is not true. Because of certain features of its particular design and start-up method, which features are incorporated in neither the PRDC reactor nor the Commission's EBR-II, certain mechanical and operational difficulties have been encountered which have limited the power at which the British reactor has thus far been able to operate. There has been no indication, however, of any inherent problem which can be expected to be encountered in the PRDC design. See description in *Symposium on the Dounreay Fast Reactor*, British Nuclear Energy Conference, London, December 7, 1960, pp. 74-85.

the summer of 1960 and extensive testing has recently been satisfactorily completed.[18]

Far from showing any inherent dangers in this reactor, the history of the design, initial testing, redesign and final testing of the fuel support structure in fact serves as an illustration of the practical wisdom of the Commission's approval of what the late Dr. Mark Mills called the "combined construction and research and development and necessary dovetailing of these things" (R. 676, 73-74). Not unexpectedly, some delay beyond the original estimate has been encountered in completion of this and other developmental reactors which have gone forward on this basis, but it is clear that, as the Commission here found (Finding 27, R. 709):

> "By proceeding with construction and further research and development simultaneously, rather than awaiting complete research and development results, Applicant will save several years in the time required to place in operation its demonstration power reactor."

CONCLUSION

In providing for a step-by-step licensing procedure in its regulations the Commission properly exercised the authority delegated to it by Congress. Its findings in this

[18] Respondents' quotation out of context of a statement contained in a request to the Commission of October 28, 1960 for delay in the proposed completion date of the reactor (a copy of which has been lodged with the clerk) is quite misleading (br. p. 9). The sentence in this request which immediately follows the statement quoted shows the redesign of the fuel support structure to have been then completed, and PRDC's Eighth Quarterly Technical Report, dated September 10, 1960 and served on respondents pursuant to the terms of the Commission's order and the modified construction permit (R. 713-14, 717), had spelled this out in detail. Further tests of the redesigned structure for some 2500 hours in flowing sodium at a temperature of 1000° F. (substantially above the reactor operating temperature) and at 150% of normal flow rate have very recently been concluded with satisfactory results.

case satisfy these regulations and are comparable to those made in other developmental power reactor proceedings. The judgment below should be reversed.

Respectfully submitted,

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APPENDIX

Atomic Energy Commission Regulations

(10 C.F.R., Chapter 1)

Section 50.10. *License required.*

* * * * *

(b) No person shall begin the construction of a production or utilization facility on a site on which the facility is to be operated until a construction permit has been issued. As used in this paragraph, the term "construction" shall be deemed to include pouring the foundation for, or the installation of, any portion of the permanent facility on the site; but does not include:

(1) Site exploration, site excavation, preparation of the site for construction of the facility and construction of roadways, railroad spurs and transmission lines;

(2) Procurement or manufacture of components of the facility;

(3) Construction of non-nuclear facilities (such as turbo-generators and turbine buildings) and temporary buildings (such as construction equipment storage sheds) for use in connection with the construction of the facility; and

(4) With respect to production or utilization facilities, other than testing facilities, required to be licensed pursuant to section 104 a. or section 104 c. of the Act, the construction of buildings which will be used for activities other than operation of a facility and which may also be used to house a facility. (For example, the construction of a college laboratory building with space for installation of a training reactor is not affected by this paragraph.)

* * * *

Section 50.40. *Common standards.* In determining that a license will be issued to an applicant, the Commission will be guided by the following considerations:

(a) The processes to be performed, the operating procedures, the facility and equipment, the use of the facility, and other technical specifications, or the proposals in regard to any of the foregoing collectively provide reasonable assurance that the applicant will comply with the

regulations in this chapter, including the regulations in Part 20, and that the health and safety of the public will not be endangered.

(b) The applicant is technically and financially qualified to engage in the proposed activities in accordance with the regulations in this chapter.

(c) The issuance of a license to the applicant will not, in the opinion of the Commission, be inimical to the common defense and security or to the health and safety of the public.

* * * *

SECTION 50.57. *Provisional operating license.*

(a) As an intermediate procedure prior to issuance of an operating license pursuant to § 50.56, the Commission may issue a provisional operating license in a proceeding where findings required for the issuance of a final operating license cannot be made because (1) construction of the facility has not been completed, or (2) there are involved features, characteristics, or components of the proposed facility as to which it appears desirable to obtain actual or further operating experience before issuance of an operating license for the full term, up to forty (40) years, requested in the application.

(b) In any case subject to paragraph (a) of this section, a provisional operating license will be issued by the Commission upon finding that:

(1) Construction of the facility has proceeded, and there is reasonable assurance that the facility will be completed, in conformity with the construction permit and the application as amended, the provisions of the Act, and the rules and regulations of the Commission; and

(2) There is reasonable assurance (i) that the activities authorized by the provisional operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in this chapter; and

(3) The applicant is technically and financially qualified to engage in the activities authorized by the provisional operating license in accordance with the regulations in this chapter; and

(4) The applicable provisions of Part 140 of this chapter have been satisfied; and

(5) There is reasonable assurance that the facility will be ready for initial loading with nuclear fuel within ninety (90) days from the date of issuance of such provisional license.

(c) Each provisional operating license will include appropriate provisions with respect to any uncompleted items of construction and such limitations or conditions as are required to assure that operations during the period of the provisional operating license will not endanger public health and safety.

(d) The duration of each provisional operating license will be specified therein, not to exceed eighteen (18) months from the date of issuance; provided, however, that upon good cause shown, the expiration date of the provisional operating license may be extended.

(e) In cases where hearings have been held in connection with proceedings under this section, the presiding officer may, upon good cause being shown, provide that any intermediate decision and order issued pursuant to this section shall become effective immediately upon issuance subject to (1) the review thereof and further decision by the Commission upon exceptions thereto filed by any party within twenty (20) days after issuance of such intermediate decision, pursuant to the Commission's rules of practice, and (2) such further order as the Commission may enter upon such exceptions or upon its own motion within forty-five (45) days after the issuance of such intermediate decision; provided, however, that in the absence of any further Commission order pursuant to the foregoing and exceptions to the intermediate decision, the intermediate decision of the presiding officer shall become the final decision of the Commission at the end of such forty-five (45) day period. In the event of objection by any party to immediate effectiveness of such intermediate decision and order, the presiding officer may in his discretion stay such effectiveness pending filing by such party within five (5) days of exceptions to the provision for immediate effectiveness and thereafter until decision on such exceptions by the Commission.